10 CSR 10-6.200 Hospital, Medical, Infectious Waste Incinerators

(1) Applicability.

(A) Except as provided in subsection (1)(B) through (H) of this rule, this rule applies to each individual hospital or medical/infectious waste incinerator (HMIWI) for which construction was commenced on or before June 20, 1996.

(B) A combustor is not subject to this rule during periods when only pathological waste, low-level radioactive waste, and/or chemotherapeutic waste is burned, provided the owner or operator of the combustor—

1. Notifies the director of an exemption claim; and

2. Keeps records on a calendar-quarter basis of the periods of time when only pathological waste, low-level radioactive waste, and/or chemotherapeutic waste is burned.

(C) Any co-fired combustor is not subject to this rule if the owner or operator of the co-fired combustor—

1. Notifies the director of an exemption claim;

2. Provides an estimate of the relative weight of hospital waste, medical/infectious waste, and other fuels and/or wastes to be combusted; and

3. Keeps records on a calendar-quarter basis of the weight of hospital waste and medical/infectious waste combusted, and the weight of all other fuels and wastes combusted at the co-fired combustor.

(D) Any combustor required to have a permit under section 3005 of the Solid Waste Disposal Act is not subject to this rule.

(E) Any combustor which meets the applicability requirements under subpart Cb, Ea, or Eb of 40 CFR part 60 is not subject to this rule.

(F) Any pyrolysis unit is not subject to this rule.

(G) Cement kilns firing hospital waste and/or medical/infectious waste are not subject to this rule.

(H) Physical or operational changes made to an existing HMIWI unit solely for the purpose of complying with this rule are not considered a modification and do not result in an existing HMIWI unit becoming subject to the provisions of 40 CFR part 60 subpart Ec.

(I) Beginning September 15, 2000, designated facilities subject to this rule shall operate pursuant to a permit issued under the permitting authorities operating permit program.

(2) Definitions.

(A) Batch HMIWI means an HMIWI that is designed such that neither waste charging nor ash removal can occur during combustion.

(B) Biologicals means preparations made from living organisms and their products, including vaccines, cultures, etc., intended for use in diagnosing, immunizing, or treating humans or animals or in research pertaining thereto.

(C) Bypass stack means a device used for discharging combustion gases to avoid severe damage to the air pollution control device or other equipment.

(D) Chemotherapeutic waste means waste material resulting from the production or use of antineoplastic agents used for the purpose of stopping or reversing the growth of malignant cells.

(E) Co-fired combustor means a unit combusting hospital waste and/or medical/infectious waste with other fuels or wastes and subject to an enforceable requirement limiting the unit to combusting a fuel feed stream, ten percent (10%) or less of the weight of which is comprised, in aggregate, of hospital waste and medical/infectious waste as measured on a calendar-quarter basis. For purposes of this definition, pathological waste, chemotherapeutic waste, and low-level radioactive waste are considered “other wastes” when calculating the percentage of hospital waste and medical/infectious waste combusted.

(F) Continuous HMIWI means an HMIWI that is designed to allow waste charging and ash removal during combustion.

(G) Department means the Department of Natural Resources.

(H) Dioxins/furans means the combined emission of tetra- through octa-chlorinated dibenzo-para-dioxins and dibenzofurans.

(I) Director means the director of the Department of Natural Resources.

(J) Dry scrubber means an add-on air pollution control system that injects dry alkaline sorbent (dry injection) or sprays an alkaline sorbent (spray dryer) to react with and neutralize acid gases in the HMIWI exhaust stream forming a dry powder material.

(K) Hospital means any facility which has an organized medical staff, maintains at least six (6) inpatient beds, and where the primary function of the institution is to provide diagnostic and therapeutic patient services and continuous nursing care primarily to human inpatients who are not related and who stay on average in excess of twenty-four (24) hours per admissions. This definition does not include facilities maintained for the sole purpose of providing nursing or convalescent care to human patients who generally are not acutely ill but who require continuing medical supervision.

(L) Hospital/medical/infectious waste incinerator or HMIWI or HMIWI unit means any device that combusts any amount of hospital waste and/or medical/infectious waste.

(M) Hospital waste means discards generated at a hospital, except unused items returned to the manufacturer. The definition of hospital waste does not include human corpses, remains, and anatomical parts that are intended for interment or cremation.

(N) Intermittent HMIWI means an HMIWI that is designed to allow waste charging, but not ash removal, during combustion.

(O) Large HMIWI means an HMIWI whose maximum design waste burning capacity is more than five hundred (500) pounds per hour, or a continuous or intermittent HMIWI whose maximum charge rate is more than five hundred (500) pounds per hour, or a batch HMIWI whose maximum charge rate is more than four thousand (4,000) pounds per day.

(P) Low-level radioactive waste means waste material which contains radioactive nuclides emitting primarily beta or gamma radiation, or both, in concentrations or quantities that exceed applicable federal or state standards for unrestricted release. Low-level radioactive waste is not high-level radioactive waste, spent nuclear fuel, or by-product material as defined by the Atomic Energy Act of 1954 (42 U.S.C. 2014(e)(2)).

(Q) Maximum charge rate means for continuous and intermittent HMIWI, one hundred ten percent (110%) of the lowest three (3)-hour average charge rate measured during the most recent performance test demonstrating compliance with all applicable emission limits or for batch HMIWI, one hundred ten percent (110%) of the lowest daily charge rate measured during the most recent performance test demonstrating compliance with all applicable emission limits.

(R) Maximum fabric filter inlet temperature means one hundred ten percent (110%) of the lowest three (3)-hour average temperature at the inlet to the fabric filter (taken, at a minimum, once every minute) measured during the most recent performance test demonstrating compliance with the dioxin/furan emission limit.

(S) Maximum flue gas temperature means one hundred ten percent (110%) of the lowest three (3)-hour average temperature at the outlet from the wet scrubber (taken, at a minimum, once every minute) measured during the most recent performance test demonstrating compliance with the mercury (Hg) emission limit.

(T) Medical/infectious waste means any waste generated in the diagnosis, treatment, or immunization of human beings or animals, in research pertaining thereto, or in the production or testing of biologicals that is listed in paragraphs (2)(T)1. through (2)(T)7. below. The definition of medical/infectious waste does not include hazardous waste identified or listed under the regulations in 40 CFR part 261; household waste, as defined in 40 CFR part 261.4(b)(1); ash from incineratioin of medical/infectious waste, once the incineration process has been completed; human corpses, remains, and anatomical parts that are intended for interment or cremation; and domestic sewage materials identified in 40 CFR part 261.4(a)(1).

1. Cultures and stocks of infectious agents and associated biologicals, including: cultures from medical and pathological laboratories; cultures and stocks of infectious agents from research and industrial laboratories; wastes from the production of biologicals; discarded live and attenuated vaccines; and culture dishes and devices used to transfer, inoculate, and mix cultures.

2. Human pathological waste, including tissues, organs, and body parts and body fluids that are removed during surgery or autopsy, or other medical procedures, and specimens of body fluids and their containers.

3. Human blood and blood products including:

A. Liquid waste human blood;

B. Products of blood;

C. Items saturated and/or dripping with human blood; and

D. Items that were saturated and/or dripping with human blood that are now caked with dried human blood; including serum, plasma, and other blood components, and their containers, which were used or intended for use in either patient care, testing and laboratory analysis or the development of pharmaceuticals. Intravenous bags are also included in this category.

4. Sharps that have been used in animal or human patient care or treatment or in medical, research, or industrial laboratories, including hypodermic needles, syringes (with or without the attached needle), pasteur pipettes, scalpel blades, blood vials, needles with attached tubing, and culture dishes (regardless of presence of infectious agents). Also included are other types of broken or unbroken glassware that were in contact with infectious agents, such as used slides and cover slips.

5. Animal waste including contaminated animal carcasses, body parts, and bedding of animals that were known to have been exposed to infectious agents during research (including

research in veterinary hospitals), production of biologicals or testing of pharmaceuticals.

6. Isolation wastes including biological waste and discarded materials contaminated with blood, excretions, exudates, or secretions from humans who are isolated to protect others from certain highly communicable diseases, or isolated animals known to be infected with highly communicable diseases.

7. Unused sharps including the following unused, discarded sharps: hypodermic needles, suture needles, syringes, and scalpel blades.

(U) Medium HMIWI means an HMIWI whose maximum design waste burning capacity is more than two hundred (200) pounds per hour but less than or equal to five hundred (500) pounds per hour, or a continuous or intermittent HMIWI whose maximum charge rate is more than two hundred (200) pounds per hour but less than or equal to five hundred (500) pounds per hour, or a batch HMIWI whose maximum charge rate is more than one thousand six hundred (1,600) pounds per day but less than or equal to four thousand (4,000) pounds per day.

(V) Minimum dioxin/furan sorbent flow rate means ninety percent (90%) of the highest three (3)-hour average dioxin/furan sorbent flow rate (taken, at a minimum, once every hour) measured during the most recent performance test demonstrating compliance with the dioxin/furan emission limit.

(W) Minimum Hg sorbent flow rate means ninety percent (90%) of the highest three (3)-hour average Hg sorbent flow rate (taken, at a minimum, once every hour) measured during the most recent performance test demonstrating compliance with the Hg emission limit.

(X) Minimum hydrogen chloride (HCl) sorbent flow rate means ninety percent (90%) of the highest three (3)-hour average HCl sorbent flow rate (taken, at a minimum, once every hour) measured during the most recent performance test demonstrating compliance with the HCl emission limit.

(Y) Minimum horsepower or amperage means ninety percent (90%) of the highest three (3)-hour average horsepower or

amperage to the wet scrubber (taken, at a minimum, once every minute) measured during the most recent performance test demonstrating compliance with the applicable emission limit.

(Z) Minimum pressure drop across the wet scrubber means ninety percent (90%) of the highest three (3)-hour average pressure drop across the wet scrubber particulate matter (PM) control device (taken, at a minimum, once every minute) measured during the most recent performance test demonstrating compliance with the PM emission limit.

(AA) Minimum scrubber liquor flow rate means ninety percent (90%) of the highest three (3)-hour average liquor flow rate at the inlet to the wet scrubber (taken, at a minimum, once every minute) measured during the most recent performance test demonstrating compliance with all applicable emission limits.

(BB) Minimum scrubber liquor pH means ninety percent (90%) of the highest three (3)-hour average liquor pH at the inlet to the wet scrubber (taken, at a minimum, once every minute) measured during the most recent performance test demonstrating compliance with all HCl emission limits.

(CC) Minimum secondary chamber temperature means ninety percent (90%) of the highest three (3)-hour average secondary chamber temperature (taken, at a minimum, once every minute) measured during the most recent performance test demonstrating compliance with the PM, carbon monoxide (CO), or dioxin/furan emission limits.

(DD) Pathological waste means waste material consisting of only human or animal remains, anatomical parts, and/or tissue, the bags/containers used to collect and transport the waste material, and animal bedding (if applicable).

(EE) Pyrolysis means the endothermic gasification of hospital waste and/or medical/infectious waste using external energy.

(FF) Small HMIWI means an HMIWI whose maximum design waste burning capacity is less than or equal to two hundred (200) pounds per hour, or a continuous or intermittent HMIWI whose maximum charge rate is less than or equal to two hundred (200)

pounds per hour, or a batch HMIWI whose maximum charge rate is less than or equal to one thousand six hundred (1,600) pounds per day.

(GG) Standard Metropolitan Statistical Area or SMSA means any areas listed in Office of Management and Budget Bulletin No. 93-17 entitled “Revised Statistical Definitions for Metropolitan Areas” date June 30, 1993 (incorporated by reference).

(HH) Wet scrubber means an add-on air pollution control device that utilizes an alkaline scrubbing liquor to collect particulate matter (including nonvaporous metals and condensed organics) and/or to absorb and neutralize acid gases.

(3) General Provisions.

(A) Emission Limits.

1. On or after the date on which the initial performance test is completed or September 1, 2000, whichever date comes first, no owner or operator of an existing HMIWI shall cause to be discharged into the atmosphere from that HMIWI any gases that contain stack emissions in excess of the limits presented in Table 1 of this subsection, except as provided for in paragraph (3)(A)2. of this rule.

TABLE 1. EMISSION LIMITS FOR SMALL, MEDIUM, AND LARGE HMIWI

Pollutant	Units (7 percent oxygen, dry basis)	Emission limits		
		HMIWI size		
		Small	Medium	Large
Particulate matter	milligrams per dry standard cubic meter (grains per dry standard cubic foot)	115 (0.05)	69 (0.03)	34 (0.015)
Carbon monoxide	parts per million by volume	40	40	40
Dioxins/furans	nanograms per dry standard cubic meter total dioxins/furans (grains per billion dry standard cubic feet) or nanograms per dry standard cubic meter TEQ (grains per billion dry standard cubic feet)	125 (55) 2.3 (1.0)	125 (55) 2.3 (1.0)	125 (55) 2.3 (1.0)
Hydrogen chloride	parts per million by volume or percent reduction	100 or 93 %	100 or 93 %	100 or 93 %
Sulfur dioxide	parts per million by volume	55	55	55
Nitrogen oxides	parts per million by volume	250	250	250
Lead	milligrams per dry standard cubic meter (grains per thousand dry standard cubic feet) or percent reduction	1.2 (0.52) or 70 %	1.2 (0.52) or 70 %	1.2 (0.52) or 70 %
Cadmium	milligrams per dry standard cubic meter (grains per thousand dry standard cubic feet) or percent reduction	0.16 (0.07) or 65 %	0.16 (0.07) or 65 %	0.16 (0.07) or 65 %
Mercury	milligrams per dry standard cubic meter (grains per thousand dry standard cubic feet) or percent reduction	0.55 (0.24) or 85 %	0.55 (0.24) or 85 %	0.55 (0.24) or 85 %

2. Small rural HMIWI located more than fifty (50) miles from the boundary of the nearest Standard Metropolitan Statistical Area and which burns less than two thousand (2,000) pounds per week of hospital waste and medical/infectious waste shall comply with the emission limits described in subparagraphs

(3)(A)2.A. and B. of this rule. The two thousand (2,000) pounds per week limitation does not apply during performance tests.

A. On or after the date on which the initial equipment inspection is completed or September 1, 2000, whichever date comes first, no owner or operator of an existing small rural HMIWI shall cause to be discharged into the atmosphere from that HMIWI any gases that contain stack emissions in excess of the limits presented in Table 2 of this subparagraph.

TABLE 2. EMISSION LIMITS FOR SMALL RURAL HMIWI

Pollutant	Units (7 percent oxygen, dry basis)	HMIWI Emission limits
Particulate matter	milligrams per dry standard cubic meter (grains per dry standard cubic foot)	197 (0.086)
Carbon monoxide	parts per million by volume	40
Dioxins/furans	nanograms per dry standard cubic meter total dioxins/furans (grains per billion dry standard cubic feet) or nanograms per dry standard cubic meter TEQ (grains per billion dry standard cubic feet)	800 (350) or 15 (6.6)
Hydrogen chloride	parts per million by volume	3100
Sulfur dioxide	parts per million by volume	55
Nitrogen oxides	parts per million by volume	250
Lead	milligrams per dry standard cubic meter (grains per thousand dry standard cubic feet)	10 (4.4)
Cadmium	milligrams per dry standard cubic meter (grains per thousand dry standard cubic feet)	4 (1.7)
Mercury	milligrams per dry standard cubic meter (grains per thousand dry standard cubic feet)	7.5 (3.3)

B. On or after the date on which the initial inspection is completed or September 1, 2000, whichever date comes first, no owner or operator of an existing small rural

HMIWI shall cause to be discharged into the atmosphere from the stack of that HMIWI any gases that exhibit greater than ten percent (10%) opacity (six (6)-minute block average).

3. On or after the date on which the initial performance test is completed or September 1, 2000, whichever date comes first, no owner or operator of an existing HMIWI shall cause to be discharged into the atmosphere from the stack of that HMIWI any gases that exhibit greater than ten percent (10%) opacity (six (6)-minute block average).

(B) Operator Training and Qualification Requirements.

1. No owner or operator of an existing HMIWI shall allow the HMIWI to operate at any time unless a fully trained and qualified HMIWI operator is accessible, either at the facility or available within one (1) hour. The trained and qualified HMIWI operator may operate the HMIWI directly or be the direct supervisor of one (1) or more HMIWI operators.

2. Operator training and qualification shall be obtained by completing the requirements included in paragraphs (3)(B)3. through 7. of this rule.

3. Training shall be obtained by completing an HMIWI operator training course that includes, at a minimum, the following provisions:

A. Twenty-four (24) hours of training on the following subjects:

(I) Environmental concerns, including pathogen destruction and types of emissions;

(II) Basic combustion principles, including products of combustion;

(III) Operation of the type of incinerator to be used by the operator, including proper startup, waste charging, and shutdown procedures;

(IV) Combustion controls and monitoring;

(V) Operation of air pollution control equipment and factors affecting performance (if applicable);

(VI) Methods to monitor pollutants and equipment calibration procedures (where applicable);

(VII) Inspection and maintenance of the HMIWI, air pollution control devices, and continuous emission monitoring systems;

(VIII) Actions to correct malfunctions or conditions that may lead to malfunction;

(IX) Bottom and fly ash characteristics and handling procedures;

(X) Applicable federal, state, and local regulations;

(XI) Work safety procedures;

(XII) Pre-startup inspections; and

(XIII) Record keeping requirements;

B. An examination designed and administered by the instructor; and

C. Reference material distributed to the attendees covering the course topics.

4. Qualifications shall be obtained by—

A. Completion of a training course that satisfies the criteria under paragraph (3)(B)3. of this rule; and

B. Either six (6) months experience as an HMIWI operator, six (6) months experience as a direct supervisor of an HMIWI operator, or completion of at least two (2) burn cycles under the observation of two (2) qualified HMIWI operators.

5. Qualification is valid from the date on which the examination is passed or the completion of the required experience, whichever is later.

6. To maintain qualification, the trained and qualified HMIWI operator shall complete and pass an annual review or refresher course of at least four (4) hours covering, at a minimum, the following:

A. Update of regulations;

B. Incinerator operation, including startup and shutdown procedures;

C. Inspection and maintenance;

D. Responses to malfunctions or conditions that may lead to malfunction; and

E. Discussion of operating problems encountered by attendees.

7. A lapsed qualification shall be renewed by one (1) of the following methods:

A. For a lapse of less than three (3) years, the HMIWI operator shall complete and pass a standard annual refresher course described in paragraph (3)(B)6. of this rule; or

B. For a lapse of three (3) years or more, the HMIWI operator shall complete and pass a training course with the minimum criteria described in paragraph (3)(B)3. of this rule.

8. The owner or operator of an HMIWI shall maintain documentation at the facility that address the following:

A. Summary of the applicable standards under this subpart;

B. Description of basic combustion theory applicable to an HMIWI;

C. Procedures for receiving, handling, and charging waste;

D. HMIWI startup, shutdown, and malfunction procedures;

E. Procedures for maintaining proper combustion air supply levels;

F. Procedures for operating the HMIWI and associated air pollution control systems within the standards established under this subpart;

G. Procedures for responding to periodic malfunction or conditions that may lead to malfunction;

H. Procedures for monitoring HMIWI emissions;

I. Reporting and record keeping procedures; and

J. Procedures for handling ash.

9. The owner or operator of an HMIWI shall establish a program for reviewing the information listed in paragraph (3)(B)8. of this rule annually with each HMIWI operator.

A. The initial review of the information listed in paragraph (3)(B)8. of this rule shall be conducted within six (6) months after the effective date of this rule or prior to assumption of responsibilities affecting HMIWI operation, whichever date is later.

B. Subsequent reviews of the information listed in paragraph (3)(B)8. of this rule shall be conducted annually.

10. The information listed in paragraph (3)(B)8. of this rule shall be kept in a readily accessible location for all HMIWI operators. This information, along with records of training shall be available for inspection by the department or its delegated enforcement agent upon request.

(C) Waste Management Plan. The owner or operator of an HMIWI shall prepare a waste management plan. The waste

management plan shall identify both the feasibility and the approach to separate certain components of solid waste from the health care waste stream in order to reduce the amount of toxic emissions from incinerated waste. A waste management plan may include, but is not limited to, elements such as paper, cardboard, plastics, glass, battery, or metal recycling; or purchasing recycled or recyclable products. A waste management plan may include different goals or approaches for different areas or departments of the facility and need not include new waste management goals for every waste stream. It should identify, where possible, reasonably available additional waste management measures, taking into account the effectiveness of waste management measures already in place, the costs of additional measures, the emission reductions expected to be achieved, and any other environmental or energy impacts they might have. The American Hospital Associa-tion publication entitled *An Ounce of Prevention: Waste Reduction Strategies for Health Care Facilities* (incorporated by reference) shall be considered in the development of the waste management plan.

(D) Inspection Guidelines.

1. Each small rural HMIWI subject to the emission limits under paragraph (3)(A)2. of this rule shall undergo an initial equipment inspection by September 1, 2000.

A. At a minimum, an inspection shall include the following:

(I) Inspect all burners, pilot assemblies, and pilot sensing devices for proper operation;

(II) Ensure proper adjustment of primary and secondary chamber combustion air;

(III) Inspect hinges and door latches;

(IV) Inspect dampers, fans and blowers for proper operation;

(V) Inspect HMIWI door and door gaskets for proper sealing;

(VI) Inspect motors for proper operation;

(VII) Inspect primary chamber refractory lining;

(VIII) Inspect incinerator shell for corrosion and/or hot spots;

(IX) Inspect secondary/tertiary chamber and stack;

(X) Inspect mechanical loader, including limit switches, for proper operation, if applicable;

(XI) Visually inspect waste bed (grates);

(XII) For the burn cycle that follows the inspection, document that the incinerator is operating properly;

(XIII) Inspect air pollution control devices for proper operation, if applicable;

(XIV) Inspect waste heat boiler systems to ensure proper operation, if applicable;

(XV) Inspect bypass stack components;

(XVI) Ensure proper calibration of thermocouples, sorbent feed systems and any other monitoring equipment; and

(XVII) Generally observe that the equipment is maintained in good operating condition.

B. Within ten (10) operating days following an equipment inspection all necessary repairs shall be completed unless the owner or operator obtains written approval from the department or local air pollution control authority establishing a date whereby all necessary repairs of the designated facility shall be completed.

2. Each small rural HMIWI subject to the emission limits under paragraph (3)(A)2. of this rule shall undergo an

equipment inspection annually (no more than twelve (12) months following the previous annual equipment inspection), as outlined in subparagraphs (3)(D)1.A. and B. of this rule.

(E) Compliance and Performance Testing.

1. The emission limits under this rule apply at all times except during periods of startup, shutdown, or malfunction, provided that no hospital waste or medical/infectious waste is charged to the HMIWI during startup, shutdown, or malfunction.

2. Except as provided in paragraph (3)(E)11. of this rule, the owner or operator of an HMIWI shall conduct an initial performance test to determine compliance with the emission limits using the procedures and test methods listed in subparagraphs (3)(E)2.A. through K. of this rule. The use of the bypass stack during a performance test shall invalidate the performance test.

A. All performance tests shall consist of a minimum of three (3) test runs conducted under representative operating conditions.

B. The minimum sample time shall be one (1) hour per test run unless otherwise indicated.

C. EPA Reference Method 1 of 40 CFR part 60, appendix A (incorporated by reference) shall be used to select the sampling location and number of traverse points.

D. EPA Reference Method 3 or 3A of 40 CFR part 60, appendix A (incorporated by reference) shall be used for gas composition analysis, including measurement of oxygen concentration. EPA Reference Method 3 or 3A shall be used simultaneously with each reference method.

E. The pollutant concentrations shall be adjusted to seven percent (7%) oxygen using the following equation:

$C_{adj} = C_{meas} (20.9 - 7) / (20.9 - \% O_2)$

where:

C_{adj} = pollutant concentration adjusted to 7 percent oxygen

C_{meas} = pollutant concentration measured on a dry basis

(20.9 – 7) = 20.9 percent oxygen – 7 percent oxygen (defined oxygen correction basis)

20.9 = oxygen concentration in air, percent

$\% O_2$ = oxygen concentration measured on a dry basis, percent

F. EPA Reference Method 5 or 29 of 40 CFR part 60, appendix A (incorporated by reference) shall be used to measure the PM emissions.

G. EPA Reference Method 9 of 40 CFR part 60, appendix A (incorporated by reference) shall be used to measure stack opacity.

H. EPA Reference Method 10 or 10B of 40 CFR part 60, appendix A (incorporated by reference) shall be used to measure the CO emissions.

I. EPA Reference Method 23 of 40 CFR part 60, appendix A (incorporated by reference) shall be used to measure total dioxin/furan emissions. The minimum sample time shall be four (4) hours per test run. If the affected facility has selected the toxic equivalency standards for dioxin/furans the following procedures shall be used to determine compliance:

(I) Measure the concentration of each dioxin/furan tetra- through octa-congener emitted using EPA Reference Method 23;

(II) For each dioxin/furan congener measured in accordance with part (3)(E)2.I.(I) of this rule, multiply the congener concentration by its corresponding toxic equivalency factor specified in Table 3 of this part; and

TABLE 3. TOXIC EQUIVALENCY FACTORS

Dioxin/furan congener	Toxic equivalency factor
2,3,7,8-tetrachlorinated dibenzo-p-dioxin	1
1,2,3,7,8-pentachlorinated dibenzo-p-dioxin	0.5
1,2,3,4,7,8-hexachlorinated dibenzo-p-dioxin	0.1
1,2,3,7,8,9-hexachlorinated dibenzo-p-dioxin	0.1
1,2,3,6,7,8-hexachlorinated dibenzo-p-dioxin	0.1
1,2,3,4,6,7,8-heptachlorinated dibenzo-p-dioxin	0.01
octachlorinated dibenzo-p-dioxin	0.001
2,3,7,8-tetrachlorinated dibenzofuran	0.1
2,3,4,7,8-pentachlorinated dibenzofuran	0.5
1,2,3,7,8-pentachlorinated dibenzofuran	0.05
1,2,3,4,7,8-hexachlorinated dibenzofuran	0.1
1,2,3,6,7,8-hexachlorinated dibenzofuran	0.1
1,2,3,7,8,9-hexachlorinated dibenzofuran	0.1
2,3,4,6,7,8-hexachlorinated dibenzofuran	0.1
1,2,3,4,6,7,8-heptachlorinated dibenzofuran	0.01
1,2,3,4,7,8,9-heptachlorinated dibenzofuran	0.01
octachlorinated dibenzofuran	0.001

(III) Sum the products calculated in accordance with part (3)(E)2.I.(II) of this rule to obtain the total concentration of dioxins/furans emitted in terms of toxic equivalency.

J. EPA Reference Method 26 of 40 CFR part 60, appendix A (incorporated by reference) shall be used to measure HCl emissions. If the affected facility has selected the percentage reduction standards for HCl under section (3) of this rule, the percentage reduction in HCl emissions (%RHCl) is computed using the following formula:

$$(\%R_{HCl}) = \frac{(E_i - E_o)}{E_i} \times 100$$

where:

$\%R_{HCl}$ = percentage reduction of HCl emission achieved

E_i = HCl emission concentration measured at the control device inlet, corrected to 7 percent oxygen (dry basis)

E_o = HCl emission concentration measured at the control device outlet, corrected to 7 percent oxygen (dry basis)

K. EPA Reference Method 29 shall be used to measure Lead (Pb), Cadmium (Cd), and Hg emissions. If the affected facility has selected the percentage reduction standards for metals under section (3) of this rule, the percentage reduction in emissions ($\%R_{metal}$) is computed using the following formula:

$$(\%R_{metal}) = \frac{(E_i - E_o)}{E_i} \times 100$$

where:

$\%R_{metal}$ = percentage reduction of metal emission (Pb, Cd, or Hg) achieved

E_i = metal emission concentration (Pb, Cd, or Hg) measured at the control device inlet, corrected to 7 percent oxygen (dry basis)

E_o = metal emission concentration (Pb, Cd, or Hg) measured at the control device outlet, corrected to 7 percent oxygen (dry basis)

3. Following the date on which the initial performance test is completed or September 1, 2000, whichever date comes first, the owner or operator of an affected facility shall—

A. Determine compliance with the opacity limit by conducting an annual performance test (no more than twelve (12) months following the previous performance test) using the applicable procedures and test methods listed in paragraph (3)(E)2. of this rule;

B. Determine compliance with the PM, CO, and HCl emission limits by conducting an annual performance test (no more than twelve (12) months following the previous performance test) using the applicable procedures and test methods listed in paragraph (3)(E)2. of this rule. If all three (3) performance tests over a three (3)-year period indicate compliance with the emission limit for a pollutant (PM, CO, or HCl), the owner or operator may forego a performance test for that pollutant for the subsequent two (2) years. At a minimum, a performance test for PM, CO, and HCl shall be conducted every third year (no more than thirty-six (36) months following the previous performance test). If a performance test conducted every third year indicates compliance with the emission limit for a pollutant (PM, CO, or HCl), the owner or operator may forego a performance test for that pollutant for an additional two (2) years. If any performance test indicates noncompliance with the respective emission limit, a performance test for that pollutant shall be conducted annually until all annual performance tests over a three (3)-year period indicate compliance with the emission limit. The use of the bypass stack during a performance test shall invalidate the performance test; and

C. Facilities using a Continuous Emission Monitoring System (CEMS) to demonstrate compliance with any of the emission limits under section (3) of this rule shall—

(I) Determine compliance with the appropriate emission limit(s) using a twelve (12)-hour rolling average, calculated each hour as the average of the previous twelve (12) operating hours (not including startup, shutdown, or malfunction); and

(II) Operate all CEMS in accordance with the applicable procedures under appendices B and F of 40 CFR part 60 (incorporated by reference).

4. The owner or operator of an affected facility equipped with a dry scrubber followed by a fabric filter, a wet scrubber, or a dry scrubber followed by a fabric filter and wet scrubber shall—

A. Establish the appropriate maximum and minimum operating parameters, indicated in Table 4 of this subparagraph for each control system, as site-specific operating parameters during the initial performance test to determine compliance with the emission limits; and during the initial performance test to determine compliance with the emission limits; and

TABLE 4. OPERATING PARAMETERS TO BE MONITORED AND MINIMUM MEASUREMENT AND RECORDING FREQUENCIES

	Minimum frequency		Control system		
Operating parameters to be monitored	Data measurement	Data recording	Dry scrubber followed by fabric filter	Wet scrubber	Dry scrubber followed by fabric filter and wet scrubber
MAXIMUM OPERATING PARAMETERS					
Maximum charge rate	Continuous	1 per hour	✓	✓	✓
Maximum fabric filter inlet temperature	Continuous	1 per minute	✓		✓
Maximum flue gas temperature	Continuous	1 per minute		✓	✓
MINIMUM OPERATING PARAMETERS					
Minimum secondary chamber temperature	continuous	1 per minute	✓	✓	✓
Minimum dioxin/furan sorbent flow rate	hourly	1 per hour	✓		✓
Minimum HCl sorbent flow rate	hourly	1 per hour	✓		✓
Minimum mercury (Hg) sorbent flow rate	hourly	1 per hour	✓		✓
Minimum pressure drop across the wet scrubber or minimum horsepower or amperage to wet scrubber	continuous	1 per minute		✓	✓
Minimum scrubber liquor flow rate	continuous	1 per minute		✓	✓
Minimum scrubber liquor pH	continuous	1 per minute		✓	✓

B. Following the date on which the initial performance test is completed or September 1, 2000, whichever date comes first, ensure that the affected facility does not operate above any of the applicable maximum operating parameters or below any of the applicable minimum operating parameters

listed in Table 4 and measured as three (3)-hour rolling averages (calculated each hour as the average of the previous three (3) operating hours) at all times except during periods of startup, shutdown and malfunction. Operating parameter limits do not apply during performance tests. Operation above the established maximum or below the established minimum operating parameter(s) shall constitute a violation of established operating parameter(s).

5. Except as provided in paragraph (3)(E)8. of this rule, for affected facilities equipped with a dry scrubber followed by a fabric filter—

A. Operation of the affected facility above the maximum charge rate and below the minimum secondary chamber temperature (each measured on a three (3)-hour rolling average) simultaneously shall constitute a violation of the CO emission limit;

B. Operation of the affected facility above the maximum fabric filter inlet temperature, above the maximum charge rate, and below the minimum dioxin/furan sorbent flow rate (each measured on a three (3)-hour rolling average) simultaneously shall constitute a violation of the dioxin/furan emission limit;

C. Operation of the affected facility above the maximum charge rate and below the minimum HCl sorbent flow rate (each measured on a three (3)-hour rolling average) simultaneously shall constitute a violation of the HCl emission limit;

D. Operation of the affected facility above the maximum charge rate and below the minimum Hg sorbent flow rate (each measured on a three (3)-hour rolling average) simultaneously shall constitute a violation of the Hg emission limit; or

E. Use of the bypass stack (except during startup, shutdown, or malfunction) shall constitute a violation of the PM, dioxin/furan, HCl, Pb, Cd and Hg emission limits.

6. Except as provided in paragraph (3)(E)8. of this rule, for affected facilities equipped with a wet scrubber—

A. Operation of the affected facility above the maximum charge rate and below the minimum pressure drop across the wet scrubber or below the minimum horsepower or amperage to the system (each measured on a three (3)-hour rolling average) simultaneously shall constitute a violation of the PM emission limit;

B. Operation of the affected facility above the maximum charge rate and below the minimum secondary chamber temperature (each measured on a three (3)-hour rolling average) simultaneously shall constitute a violation of the CO emission limit;

C. Operation of the affected facility above the maximum charge rate, below the minimum secondary temperature, and below the minimum scrubber liquor flow rate (each measured on a three (3)-hour rolling average) simultaneously shall constitute a violation of the dioxin/furan emission limit;

D. Operation of the affected facility above the maximum charge rate and below the minimum scrubber liquor pH (each measured on a three (3)-hour rolling average) simultaneously shall constitute a violation of the HCl emission limit;

E. Operation of the affected facility above the maximum flue gas temperature and above the maximum charge rate (each measured on a three (3)-hour rolling average) simultaneously shall constitute a violation of the Hg emission limit; or

F. Use of the bypass stack (except during startup, shutdown, or malfunction) shall constitute a violation of the PM, dioxin/furan, HCl, Pb, Cd and Hg emission limits.

7. Except as provided in paragraph (3)(E)8. of this rule, for affected facilities equipped with a dry scrubber followed by a fabric filter and a wet scrubber—

A. Operation of the affected facility above the maximum charge rate and below the minimum secondary chamber temperature (each measured on a three (3)-hour rolling average)

simultaneously shall constitute a violation of the CO emission limit;

B. Operation of the affected facility above the maximum fabric filter inlet temperature, above the maximum charge rate, and below the minimum dioxin/furan sorbent flow rate (each measured on a three (3)-hour rolling average) simultaneously shall constitute a violation of the dioxin/furan emission limit;

C. Operation of the affected facility above the maximum charge rate and below the minimum scrubber liquor pH (each measured on a three (3)-hour rolling average) simultaneously shall constitute a violation of the HCl emission limit;

D. Operation of the affected facility above the maximum charge rate and below the minimum Hg sorbent flow rate (each measured on a three (3)-hour rolling average) simultaneously shall constitute a violation of the Hg emission limit; or

E. Use of the bypass stack (except during startup, shutdown, or malfunction) shall constitute a violation of the PM, dioxin/furan, HCl, Pb, Cd and Hg emission limits.

8. The owner or operator of an affected facility may conduct a repeat performance test within thirty (30) days of violation of applicable operating parameter(s) to demonstrate that the affected facility is not in violation of the applicable emission limit(s). Repeat performance tests conducted pursuant to this paragraph shall be conducted using the identical operating parameters that indicated a violation under paragraphs (3)(E)5., 6., or 7. of this rule.

9. The owner or operator of an affected facility using an air pollution control device other than a dry scrubber followed by a fabric filter, a wet scrubber, or a dry scrubber followed by a fabric filter and a wet scrubber to comply with the emission limits under section (3) of this rule shall petition the administrator for other site-specific operating parameters to be established during the initial performance test and continuously monitored thereafter. The owner or operator shall not conduct

the initial performance test until after the petition has been approved by the administrator.

10. The owner or operator of an affected facility may conduct a repeat performance test at any time to establish new values for the operating parameters. The department may request a repeat performance test at any time.

11. Small rural HMIWI subject to the emission limits under paragraph (3)(A)2. of this rule shall meet the following compliance and performance testing requirements:

A. Conduct the performance testing requirements in paragraph (3)(E)1., subparagraphs (3)(E)2.A. through I., (3)(E)2.K. (Hg only), and (3)(E)3.A. of this rule. The two thousand (2,000) pound per week limitation does not apply during performance tests;

B. Establish maximum charge rate and minimum secondary chamber temperature as site-specific operating parameters during the initial performance test to determine compliance with applicable emission limits;

C. Following the date on which the initial performance test is completed or September 1, 2000, whichever date comes first, ensure that the designated facility does not operate above the maximum charge rate or below the minimum secondary chamber temperature measured as three (3)-hour rolling averages (calculated as the average of the previous three (3) operating hours) at all times except during periods of startup, shutdown and malfunction. Operating parameter limits do not apply during performance tests. Operation above the maximum charge rate or below the minimum secondary chamber temperature shall constitute a violation of the established operating parameter(s);

D. Except as provided in subparagraph (3)(E)11.E. of this rule, operation of the designated facility above the maximum charge rate and below the minimum secondary chamber temperature (each measured on a three (3)-hour rolling average) simultaneously shall constitute a violation of the PM, CO, and dioxin/furan emission limits; and

E. The owner or operator of a designated facility may conduct a repeat performance test within thirty (30) days of the violation of applicable operating parameter(s) to demonstrate that the designated facility is not in violation of the applicable emission limit(s). Repeat performance tests conducted pursuant to this paragraph must be conducted using the identical operating parameters that indicated a violation under subparagraph (3)(E)11.D. of this rule.

(F) Monitoring Requirements.

1. Except as provided for under paragraph (3)(F)5. of this rule, the owner or operator of an HMIWI shall install, calibrate (to manufacturers' specification), maintain, and operate devices (or establish methods) for monitoring the applicable maximum and minimum operating parameters listed in Table 4 of subparagraph (3)(E)4.A. of this rule such that these devices (or methods) measure and record values for these operating parameters at the frequency indicated in Table 4 of subparagraph (3)(E)4.A. at all times except during periods of startup and shutdown.

2. The owner or operator of an HMIWI shall install, calibrate (to manufacturers' specifications), maintain and operate a device or method for measuring the use of the bypass stack including date, time, and duration.

3. The owner or operator of an HMIWI using something other than a dry scrubber followed by a fabric filter, a wet scrubber, or a dry scrubber followed by a fabric filter and a wet scrubber to comply with the emission limits under section (3) of this rule shall install, calibrate (to manufacturers' specifications), maintain, and operate the equipment necessary to monitor the site-specific operating parameters developed pursuant to paragraph (3)(E)9. of this rule.

4. The owner or operator of an HMIWI shall obtain monitoring data at all times during HMIWI operation except during periods of monitoring equipment malfunction, calibration, or repair. At a minimum, valid monitoring data shall be obtained for seventy-five percent (75%) of the operating hours per day for ninety percent (90%) of the operating days per calendar quarter

that the HMIWI is combusting hospital waste and/or medical/infectious waste.

5. Small rural HMIWI subject to the emission limits under paragraph (3)(A)2. of this rule shall meet the following monitoring requirements:

A. Install, calibrate (to manufacturers' specification), maintain, and operate a device for measuring and recording the temperature of the secondary chamber on a continuous basis, the output of which shall be recorded, at a minimum, once every minute throughout operation;

B. Install, calibrate (to manufacturers' specification), maintain, and operate a device that automatically measures and records the date, time, and weight of each charge fed into the HMIWI; and

C. The owner or operator of a designated facility shall obtain monitoring data at all times during HMIWI operation except during periods of monitoring equipment malfunction, calibration, or repair. At a minimum, valid monitoring data shall be obtained for seventy-five percent (75%) of the operating hours per day for ninety percent (90%) of the operating days per calendar quarter that the designated facility is combusting hospital waste and/or medical/infectious waste.

(4) Reporting and Record Keeping.

(A) Except as provided for under subsection (4)(F) of this rule, the owner or operator of an HMIWI shall maintain the following information (as applicable) for a period of at least five (5) years:

1. Calendar date of each record;

2. Records of the following data:

A. Concentrations of any pollutant listed in section (3) of this rule or measurements of opacity as determined by the continuous emission monitoring system (if applicable);

B. HMIWI charge dates, times, and weights and hourly charge rates;

C. Fabric filter inlet temperatures during each minute of operation, as applicable;

D. Amount and type of dioxin/furan sorbent used during each hour of operation, as applicable;

E. Amount and type of Hg sorbent used during each hour of operation, as applicable;

F. Amount and type of HCl sorbent used during each hour of operation, as applicable;

G. Secondary chamber temperatures recorded during each minute of operation;

H. Liquor flow rate to the wet scrubber inlet during each minute of operation, as applicable;

I. Horsepower or amperage to the wet scrubber during each minute of operation, as applicable;

J. Pressure drop across the wet scrubber system during each minute of operation, as applicable;

K. Temperature at the outlet from the wet scrubber during each minute of operation, as applicable;

L. pH of the scrubber liquor at the inlet to the wet scrubber during each minute of operation, as applicable;

M. Records indicating use of the bypass stack, including dates, times, and durations; and

N. For HMIWI complying with paragraph (3)(E)9. and paragraph (3)(F)3. of this rule, the owner or operator shall maintain all operating parameter data collected;

3. Identification of calendar days for which data on emission rates or operating parameters specified under paragraph (4)(A)2. of this rule have not been obtained, with an

identification of the emission rates or operating parameters not measured, reasons for not obtaining the data, and a description of corrective actions taken;

4. Identification of calendar days, times and durations of malfunctions, a description of the malfunction and the corrective action taken;

5. Identification of calendar days for which data on emission rates or operating parameters specified under paragraph (4)(A)2. of this rule exceeded the applicable limits, with a description of the exceedances, reasons for such exceedances, and a description of corrective actions taken;

6. The results of the initial, annual, and any subsequent performance tests conducted to determine compliance with the emission limits and/or to establish operating parameters, as applicable;

7. Records showing the names of HMIWI operators who have completed review of the information in paragraph (3)(B)8. of this rule as required by paragraph (3)(B)9. of this rule, including the date of the initial review and all subsequent annual reviews;

8. Records showing the names of the HMIWI operators who have completed the operator training requirements, including documentation of training and the dates of the training;

9. Records showing the names of the HMIWI operators who have met the criteria for qualification under subsection (3)(B) of this rule and the dates of their qualification; and

10. Records of calibration of any monitoring devices as required under paragraphs (3)(F)1., 2., and 3. of this rule.

(B) The owner or operator of an HMIWI shall submit to the department the information specified in paragraphs (4)(B)1. through 3. of this rule no later than sixty (60) days following the initial performance test. All reports shall be signed by the facilities manager.

1. The initial performance test data as recorded under subparagraphs (3)(E)2.A. through K. of this rule, as applicable.

2. The values for the site-specific operating parameters established pursuant to paragraph (3)(E)4. or 9. of this rule, as applicable.

3. The waste management plan as specified in subsection (3)(C) of this rule.

(C) An annual report shall be submitted to the department one (1) year following the submission of the information in subsection (4)(B) of this rule and subsequent reports shall be submitted no more than twelve (12) months following the previous report (once the unit is subject to permitting requirements under Title V of the Clean Air Act, the owner or operator of an affected facility must submit these reports semiannually). The annual report shall include the information specified in paragraphs (4)(C)1. through 8. of this rule. All reports shall be signed by the facilities manager.

1. The values for the site-specific operating parameters established pursuant to paragraph (3)(E)4. or 9. of this rule, as applicable.

2. The highest maximum operating parameter and the lowest minimum operating parameter, as applicable, for each operating parameter recorded for the calendar year being reported, pursuant to paragraph (3)(E)4. or 9. of this rule, as applicable.

3. The highest maximum operating parameter and the lowest minimum operating parameter, as applicable for each operating parameter recorded pursuant to paragraph (3)(E)4. or 9. of this rule for the calendar year preceding the year being reported, in order to provide the department with a summary of the performance of the affected facility over a two (2)-year period.

4. Any information recorded under paragraphs (4)(A)3. through 5. of this rule for the calendar year being reported.

5. Any information recorded under paragraphs (4)(A)3. through 5. of this rule for the calendar year preceding the year being reported, in order to provide the department with a summary of the performance of the affected facility over a two (2)-year period.

6. If a performance test was conducted during the reporting period, the results of that test.

7. If no exceedances or malfunctions were reported under paragraphs (4)(A)3. through 5. of this rule for the calendar year being reported, a statement that no exceedances occurred during the reporting period.

8. Any use of the bypass stack, the duration, reason for malfunction, and corrective action taken.

(D) The owner or operator of an HMIWI shall submit to the department semiannual reports containing any information recorded under paragraphs (4)(A)3. through 5. of this rule no later than sixty (60) days following the reporting period. The first semiannual reporting period ends six (6) months following the submission of information in subsection (4)(B) of this rule. Subsequent reports shall be submitted to the department no later than six (6) calendar months following the previous report. All reports shall be signed by the facilities manager.

(E) All records specified under subsection (4)(A) of this rule shall be maintained on-site in either paper copy or computer-readable format, unless an alternative format is approved by the department.

(F) The owner or operator of a small rural HMIWI subject to the emission limits under paragraph (3)(A)2. of this rule shall—

1. Maintain records of the annual equipment inspections, any required maintenance, and any repairs not completed within ten (10) days of an inspection or the time frame established by the inspector; and

2. Submit an annual report to the department containing information recorded under paragraph (4)(F)1. of

this rule no later than sixty (60) days following the year in which data were collected. Subsequent reports shall be sent no later than twelve (12) calendar months following the previous report (once the unit is subject to permitting requirements under Title V of the Clean Air Act, the owner or operator must submit these reports semiannually). The report shall be signed by the facilities manager.

(5) Test Methods. Test methods can be found in subparagraphs (3)(E)2.A. through (3)(E)2.K. of this rule.

EPA Rulemakings

CFR: 40 C.F.R. 62.6358

FRM: 66 FR 52060 (10/12/2001)

PRM: 66 FR 52077 (10/12/2001)

State Submission: 07/13/2001

State Final: 10 C.S.R. 10-6 (06/30/2001)

APDB File: MO-192

Description: This revision to the state plan approves modifications to two definitions to make them equivalent to the EPA definitions. In subsection (2)(E) and (2)(T) the terms “co-fired combustor” and “medical/infectious waste” were amended.

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CFR: 40 C.F.R. 62.6358

FRM: 64 FR 45184 (8/19/99)

PRM: 64 FR 45221 (8/19/99)

State Submission: 6/15/99

State Proposal: 1/4/99

State Final: 7/30/99

APDB File: MO-138

Description: This state plan establishes emission limits and controls for hospital medical waste incinerator sources constructed on or before June 20, 1996.

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Difference Between the State and EPA-Approved Regulation

None.